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Socialsibs: The effects of a hybrid intervention on the core social communicative behaviors of children with ASD.

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Purpose/Introduction

Social communication challenges are a central feature of autism spectrum disorders (ASD; APA, 2013). Social communication **skills** are often a key focus of intervention; however, generalization of skills to natural contexts, particularly peer relationships is a challenge for many children on the spectrum (Ferraioli & Harris, 2011; Schreiber, 2011; Wang & Spillane, 2009).

Socialsibs is a hybrid intervention that targets social interaction, communication, and reciprocity using a combination of video modeling and sibling-mediation within a naturalistic behavioral framework. The intervention was examined within a waitlist control design study with children with ASD and their neurotypical siblings. The current poster will report the effects of Socialsibs on the collateral behaviors of behavior regulation, social interaction and joint attention skills. These behaviors were not directly targeted within the intervention, but hypothesized to change as a function of targeting individualized social communication goals.

Sibling-Mediated Intervention: Sibling mediated intervention is based on peer-mediated intervention (PMI), which coaches NT peers in strategies to facilitate and reinforce the social communication of children on the spectrum. The sibling is taught strategies such as: increasing responsiveness to communication bids; asking questions to maintain interactions; offering choices to maintain motivation; and commenting on the play. PMI has been found effective for increasing and supporting the generalization of social communication skills in children with ASD (National Autism Center, 2009; 2014) PMI is typically conducted in within the context of preferred naturalistic play activities.

Video Modeling: Video Modeling is a treatment approach that directly targets specific behaviors (social communication, play, adaptive living, etc.) through video (Charlop et al, 2010; Banda, Matuszny, & Turkan, 2007). A short video depicting a specific target behavior is created – the video typically has 3-4 examples of the target behavior. The video model is then shown to the child with ASD, with the clinician stopping the video at specific points to highlight the target behavior. Directly after watching the video the clinician and learner practice the behavior within the same naturalistic context modeled in the video; the clinician provides prompts and reinforcement to the child (Banda, Matuszny, & Turkan, 2007).

Research Question
What are the effects of Socialsibs on untreated social communication behaviors within natural play activities?

Method

Participants: Participants included 20 sibling dyads randomized into one of two groups: Immediate treatment group (IT; n=13 sibling dyads) and waitlist control group (WLC; n=6 sibling dyads). Each dyad included a child with ASD, ages 4-7, and his/her neurotypical sibling, ages 5-10.

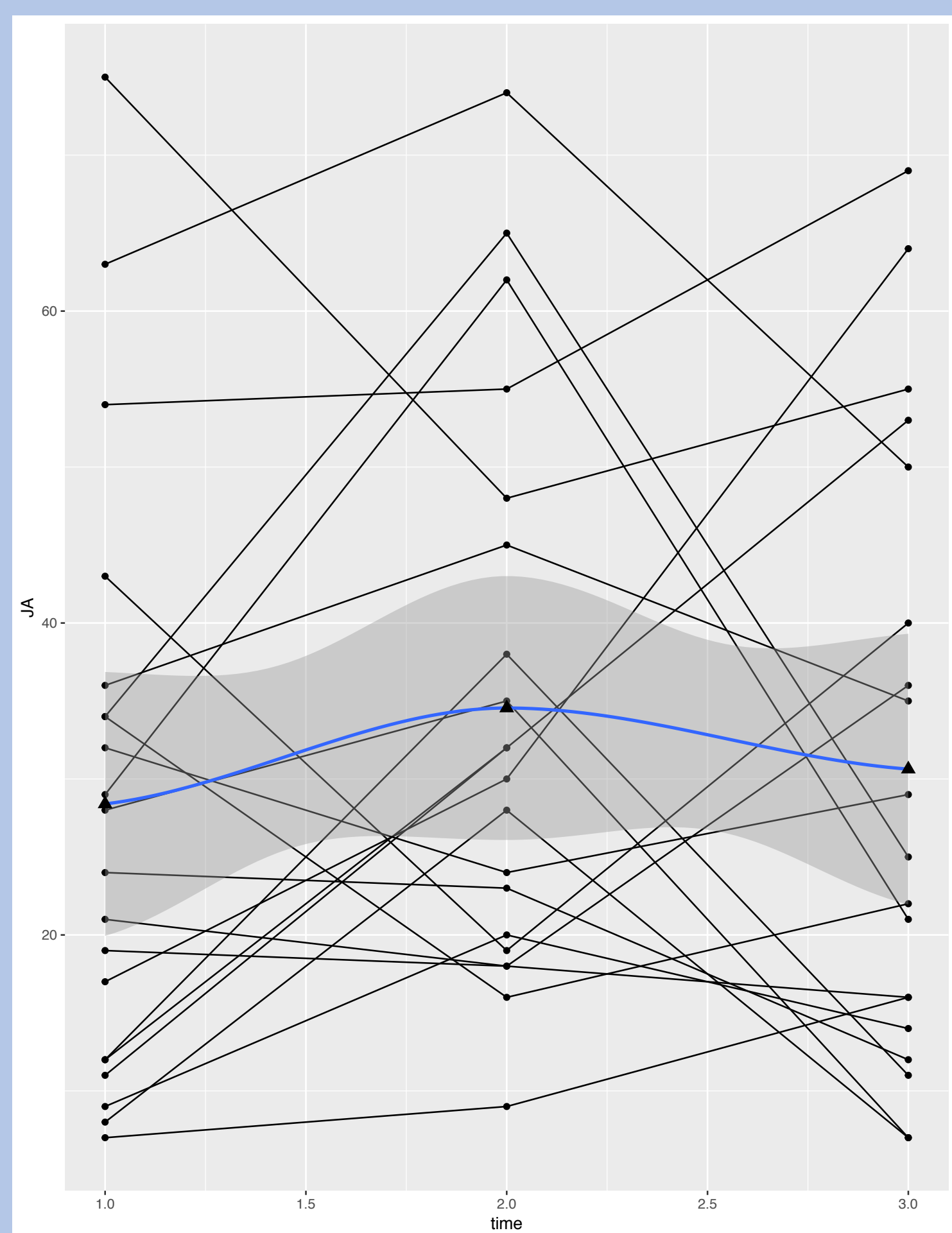
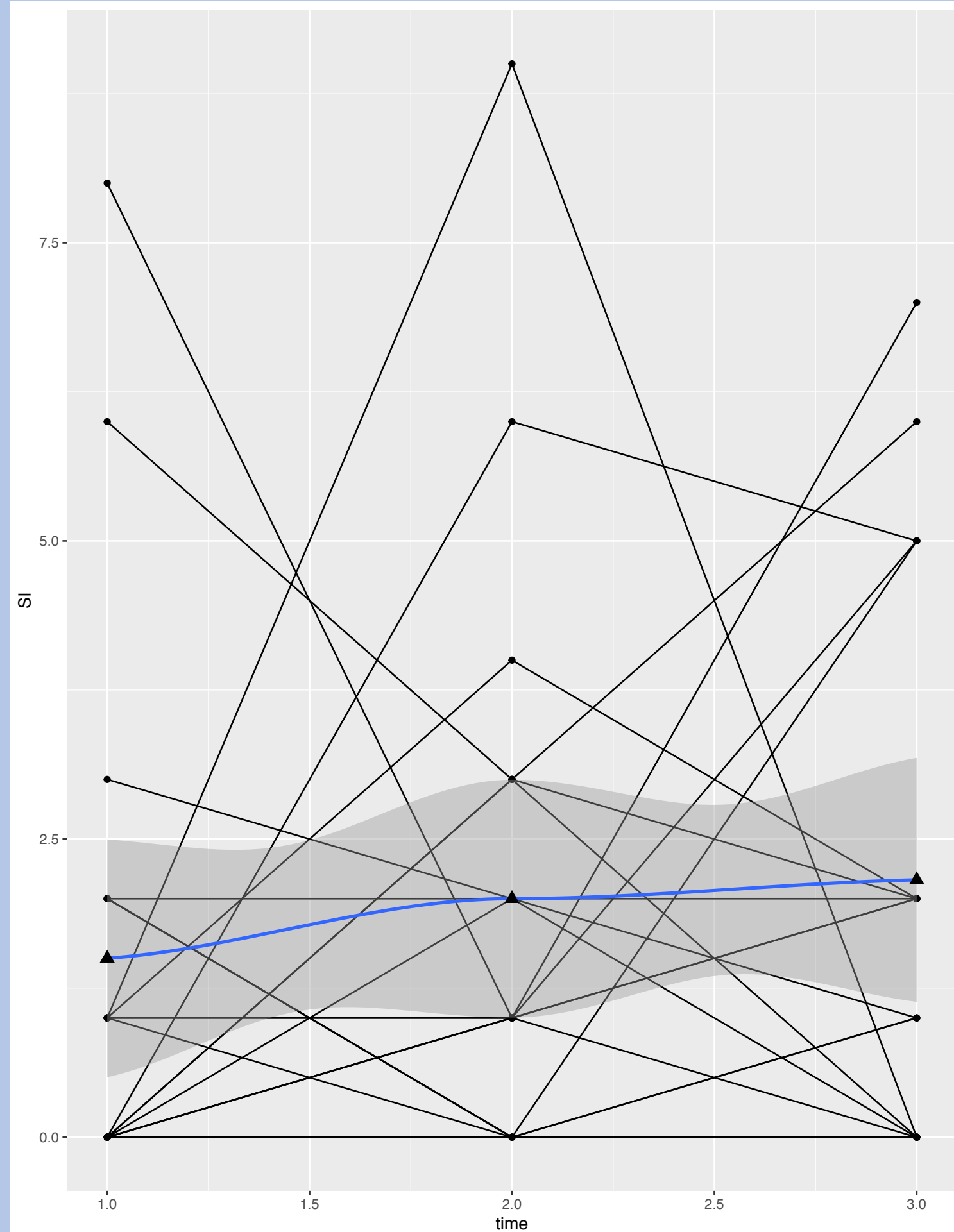
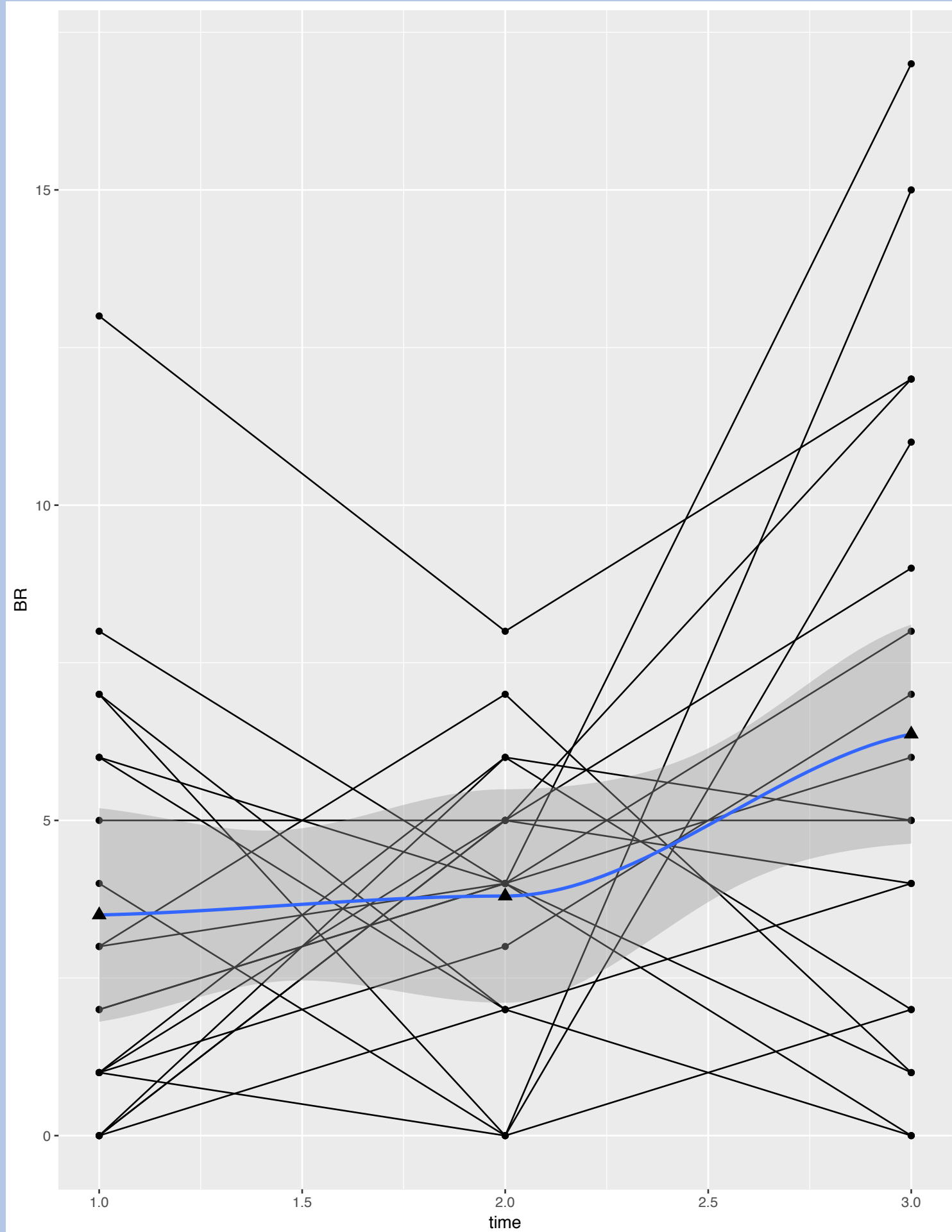
Procedures: Intervention was provided given to the Tx group two times per week for 10 weeks. Sibling mediation examples included gaining attention, providing child choice, responding to all communication bids, encouraging communication, and expanding on communication. Use of SMI and VM were alternated across sessions and counterbalanced across participants to limit sequencing effects. Throughout intervention, treatment data of individual performance was used to modify level of support and reinforcement as needed. Those in WLC after 10 weeks, then moved into immediate treatment.

Measures: At pre-tx (T1), post-tx (T2), and 1 month follow-up (T3) data were collected during 10-minute social interactions during play between the sibling dyads. No supports were provided and no treatment materials were used within these probe sessions.

Coding: All coding was completed using Noldus Observer XT. Coding consisted of frequency of occurrence of social communication behaviors: 1) *behavior regulation*; 2) *social interaction*; and, 3) *joint attention*. Coders were blinded to the study aims and were trained for 4 weeks completing four steps of reliability training reaching 80% accuracy.

Analysis: In the WLC group, no significant difference in use of behavior regulation behaviors was found for dyads across time $t(23)=2.06, p=.33$. Therefore, data for both WLC and IT was combined for remaining analysis and interpretation. A generalized linear model was then conducted to examine how participants changed over time (fixed effect) on the use of social communication behaviors by participants at T1, T2, and T3. For the predicted variable we assumed a Poisson distribution with a log link.

Reliability: A reliability check was performed halfway through coding to account for coder drift. Inter-rater reliability is currently being completed for the 20% of the sample.



Results

- There was a small, yet statistically significant effect of time for two social communication behaviors: Behavior Regulation and Joint Attention.

Behavior regulation

- $\chi^2(56) = 165.503$
- Omnibus test against intercept only model : likelihood ratio $\chi^2 = 20.148, p < .001$.

| Parameter Estimates | | | | | |
|---------------------|--------|-------------|--------|-----------------|--------|
| Parameter | B | 95% Wald CI | | Hypothesis Test | |
| | | Lower | Upper | Wald χ^2 | p |
| (Intercept) | 1.851 | 1.673 | 2.030 | 414.728 | < .001 |
| [time=1] | -0.599 | -0.893 | -0.304 | 15.889 | < .001 |
| [time=2] | -0.516 | -0.803 | -0.229 | 12.446 | < .001 |

Social interaction

- $\chi^2(56) = 149.472$
- Omnibus test against intercept only model: likelihood ratio $\chi^2 = 2.546, p = .280$.

Joint Attention

- $\chi^2(56) = 646.296$
- Omnibus test against intercept only model : likelihood ratio $\chi^2 = 12.330, p = .002$.

| Parameter Estimates | | | | | |
|---------------------|--------|-------------|-------|-----------------|--------|
| Parameter | B | 95% Wald CI | | Hypothesis Test | |
| | | Lower | Upper | Wald χ^2 | p |
| (Intercept) | 3.422 | 3.341 | 3.503 | 6815.39 | < .001 |
| [time=1] | -0.076 | -0.191 | 0.040 | 1.645 | .200 |
| [time=2] | 0.120 | 0.010 | 0.231 | 4.578 | .032 |

Discussion

- Overall, children with ASD demonstrated an increase in Behavior Regulation behaviors from T1 to T3
- Overall, children with ASD demonstrated an increase in JA behaviors from T1 to T2; this increase was not sustained through follow up (T3)
- Although all materials were identified as “motivating” the influence of context may have impacted performance across time points
- Given the variability of performance at T1, further investigation with a larger sample is warranted to determine if performance on BR behaviors is potentially predictive of collateral benefit of Socialsibs intervention on untreated social communication behaviors
 - Potential ceiling effect of earlier social communication behaviors for some children?

Acknowledgments

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